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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/056,920	01/24/2002	Mark Roh	010450	3753

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QUALCOMM INCORPORATED
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EXAMINER	
CHO, HONG SOL	
ART UNIT	PAPER NUMBER
2616	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	12/21/2006	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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Office Action Summary	Application No.	Applicant(s)	
	10/056,920	ROH ET AL.	
	Examiner	Art Unit	
	Hong Cho	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 October 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-86* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,11-23,25-31,34-37,41-47,51-57,61-73,75-81 and 84-86* is/are rejected.

7)☒ Claim(s) *8-10,24,32,33,38-40,48-50,58-60,74,82 and 83* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This office action is in response to the amendment filed on 10/16/2006. Claims 1-86 are pending in the instant application.

Claim Objections

2. Claims 16, 24, 25, 41 and 74 are objected to because of the following informalities:

Re claims 25 (line 6) and 41 (line 7), "sum" should read - - sums - - .

Re claims 16, 24 and 74, "embedded signal" should read - - time offset information - - .

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102(e) that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-5, 11-14, 16-23, 51-55, 61-64 and 66-73, are rejected under 35 U.S.C. 102(e) as being anticipated by Brunner et al (U.S 6567462), hereinafter referred to as Brunner.

Re claims 1, 14, 51 and 64, Brunner discloses obtaining pilot spreading codes (*time offset information*) from received radio signal (*a first signal*) (*searching for time offset information signal in a first signal*, column 2, lines 44-48). Brunner discloses correlating a received signal (*a first signal*) with a user data spreading codes (*a second signal*) (*producing a plurality of first correlated values from a portion of the first signal and a second signal*, column 10, lines 17-22), outputting correlated samples (*a plurality of first correlated values)* to a discrete Fourier transformer (*transforming the first correlated values into a plurality of second correlation values related to a frequency content of the first correlation values*, column 12, lines 34-38) and recovering data symbols by using the outputs (*second correlated values)* of the discrete Fourier transformer (*searching for time offset information by evaluating the second correlation values*, column 9, lines 58-67).

Re claim 14, Brunner discloses determining correlating values by correlating a first signal with a second signal by using chip duration and number of chips within the correlation window (*correlating the first signal with a second signal by adjusting a phase of the first signal with respect to the second signal*, column 10, lines 59-67).

Re claims 2, 16, 52 and 66, Brunner discloses the time offset information corresponding to a pilot signal (figure 3b, element 30).

Re claims 3, 17, 53 and 67, Brunner discloses receiving a spread pilot signal (*a pilot signal spread by a code*) and correlating with a user data spreading codes (*a second signal comprising a replica of the code*, column 7, lines 64-66).

Re claims 4, 18, 54 and 68, Brunner inherently discloses the code comprising a pseudo-random code.

Re claims 5 and 55, Brunner discloses the first and second signal comprising a plurality of chips (figure 3b).

Re claims 11-13, 19-21, 61-63 and 69-71, Brunner discloses the frequency device being a discrete Fourier transformer or a fast transformer (column 4, lines 24-23).

Re claims 22 and 72, Brunner inherently discloses first correlation values with one frequency components and second correlation values with another frequency components.

Re claims 23 and 73, Brunner discloses recovering data symbols by using the outputs (*second correlated values)* from the discrete Fourier transformer and applying the optimum weight vector to the data symbols (*selecting second correlation value with maximum magnitude*, column 9, lines 58-67).

Claims 25-31, 37, 41-43, 47, 75-81 and 86 are rejected under 35 U.S.C. 102(e) as being anticipated by Furukawa et al (U.S 6414985), hereinafter referred to as Furukawa.

Re claims 25, 37, 41, 47, 75, and 86, Furukawa discloses a detection circuit (*a searcher*, figure 4, element 18) comprising a correlator (figure 4, comprising elements 205 and 206) correlating received signals (*a first signal*) with pilot spreading codes and inputting outputs from a de-spreader to a phase rotator (*a correlator configured to produce a plurality of first correlated values, comprising a partial coherent sum, from first signal and second signals*), a transformer (*a processor*, figure 4, comprising

elements 169 and 19) taking correlated samples (*a plurality of first correlated values)* from the correlator and transforming to a frequency domain signal from a time domain signal (*second correlated values)* (*a processor configured to transform the first correlated values into a plurality of second correlation values related to a different frequency component of the first signal*), and a detector (figure 4, element 170) to monitor the second correlation values over a time period and select one of the frequency components having a peak second correlation value (column 7, line 66 to column 8, line 8). Furukawa discloses monitoring correlation values over a time period to select a peak correlation value (figure 4, element 170).

Re claims 26, 42 and 76, Furukawa discloses a multiplier multiplying the first signal portion (I and Q signal) with the second signal (PN(I) and PN(Q) to produce a plurality of product values and a plurality of adders coherently combining different portions of the product values to produce a plurality of coherent sums each comprising one of the first correlation values.

Re claims 27, 28, 43, 77 and 78, Furukawa discloses a delay device with 64 chip delay (*a buffer with a shift register*, figure 6, element 70) providing a first signal to the multiplier (figure 6, element 80).

Re claims 29 and 79, Furukawa discloses a delay device with 64 chip delay (*a buffer with a shift register*, figure 6, element 70) providing a first signal to the multiplier (figure 6, element 80).

Re claims 30, 31, 80 and 81, Furukawa inherently discloses a delay device receiving chips and providing a chip to the multiplier.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 6 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brunner in view of Sakoda (US 6909704).

Re claims 6 and 56, Brunner discloses all of the limitations of the base claim, but fails to disclose the portion of the first signal and the second signal each comprising 96 chips. Sakoda discloses a pilot interval to be 96 chips (column 1, lines 42-43). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the chip rate of Brunner to be 96 so that the chip rate for transmitting a pilot signal would be distinguished from that of a power control signal.

Claims 7, 15, 57 and 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brunner in view of Furukawa.

Re claims 7, 15, 57 and 65, Brunner discloses all of the limitations of the base claim, but fails to disclose multiplying the first signal portion with the second signal to produce a plurality of product values, and coherently combining different portions of the product values to produce a plurality of coherent sums each comprising one of the first

correlation values. Furukawa discloses multiplying the first signal portion (I and Q signal) with the second signal to produce a plurality of product values (figure 4, element 206) and coherently combining different portions of the product values to produce a plurality of coherent sums each comprising one of the first correlation values (figure 4, element 206). It would have been obvious to one having ordinary skill in the art at the time the invention was made to implement correlating process of Furukawa for coherent detection of a pilot signal.

Claims 34-36, 44-46, 84 and 85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furukawa in view of Brunner.

Re claims 34-36, 44-46, 84 and 85, Furukawa discloses all of the limitations of the base claim, but fails to disclose the processor being a discrete or fast Fourier transform. Brunner discloses the frequency device being a discrete Fourier transformer or a fast transformer (column 4, lines 24-23). It would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the orthogonal transformation function by fast Hadamard transform with fast Fourier transform since fast Fourier transform is commonly used technique for orthogonal transformation.

Allowable Subject Matter

7. Claims 8-10, 24, 32, 33, 38-40, 48-50, 58-60, 74, 82 and 83 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. Claims 8 and 58 are allowable over the prior art of record since the cited references taken individually or in combination fail to particularly teach or fairly suggest the coherent combination of the different product value portions producing three coherent sums.

Claims 9 and 59 are allowable over the prior art of record since the cited references taken individually or in combination fail to particularly teach or fairly suggest the multiplication of the first signal portion with the second signal producing 96 product values.

Claims 24 and 74 are allowable over the prior art of record since the cited references taken individually or in combination fail to particularly teach or fairly suggest the time offset information search comprising identifying the second correlation value with a maximum magnitude over a first portion of the first signal phases and identifying the second correlation value with a maximum magnitude over a second portion of the first signal phases, noncoherently combining the second correlation values for the frequency components having the identified second correlation values to produce a plurality of third correlation values, and using the third correlation value having a maximum magnitude to determine whether the embedded signal is present.

Claims 32 and 82 are allowable over the prior art of record since the cited references taken individually or in combination fail to particularly teach or fairly suggest the multiplier comprising 96 multipliers each producing one product value.

Claims 38 and 48 are allowable over the prior art of record since the cited references taken individually or in combination fail to particularly teach or fairly suggest

the selected frequency components for both time periods each comprises a portion of the second correlation values each having a complex value, the searcher further comprising a converter configured to convert each of the complex values into a magnitude value, and an adder configured to noncoherently combine the second correlation values for the time period with the second correlation values for the second time period.

Response to Arguments

9. Applicant's arguments filed on 10/16/2006 have been fully considered but they are not persuasive.

On page 20 of the Remark, the Applicant argues that Brunner does not disclose searching for time offset information in the first signal. The Examiner respectfully disagrees. Brunner discloses obtaining pilot spreading codes (*time offset information*) from received radio signal (*a first signal*) (*searching for time offset information signal in a first signal*) as described in the rejection of claim 1.

On page 21 of the Remark, the Applicant argues that Brunner does not disclose a processor derotating and combining partial coherent sums and converting the result from a time domain signal to a frequency domain signal. Brunner discloses a transformer combining partial coherent sums and converting the result from a time domain signal to a frequency domain signal. Refer to the rejection of claim 25.

Therefore, the Examiner concludes that the rejection of claims stands.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hong Cho whose telephone number is 571-272-3087. The examiner can normally be reached on Mon-Fri during 7 am to 4 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on 571-272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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